COMPUTERWORLD

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Controversy Abounds, But FBI Proceeds With NCHS

By Joseph Hanlon
Of the CW Staff
(First in a series)

WASHINGTON, D.C. – Despite continuing controversy and the temporary refusal of at least one state to participate, the FBI's computerized National Criminal History System (NCHS) will begin operation in November.

Records of everyone arrested for all but minor offenses will be centralized in the FBI's 360/65 here; data eventually will be available on-line to police departments and correction officials throughout the country.

The system will start slowly, with only a few states participating and most of those only adding records of people arrested after November. No attempt will be made to computerize the FBI's 20 million manual files.

The FBI's present handling of arrest records has

Spotlight Report

come under strong criticism, and many of the critics have warned that procedures apparently will be no better under NCHS.

In a recent ruling against the FBI [CW, June 23], U.S. District Court Judge Gerhard A. Gesell charged that the FBI "cannot prevent improper dissemination and use of material it supplies to hundreds of local agencies.

"Control of data will be made even more difficult and opportunities for improper use will increase with the development of centralized state information centers linked by computer to the [FBI]," Gesell said.

Nevertheless, the FBI has yet to announce any privacy safeguards for the new system. There is considerable concern by state criminal justice officials and others that if any safeguards are adopted, they will be very weak.

The fact that NCHS is under FBI control is being

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Matching DP, User Needs Seen for 70s

Special to Computerworld

LJUBLJANA, Yugoslavia – "Economic payoff" will be the by-word of the future, preventing engineering breakthroughs from causing wholesale replacement of existing computer systems, it was predicted at the closing session of Ifip '71 here last week.

Isaac L. Auerbach also forecast that notable progress in bringing computing power closer to its ultimate user, and matching that power to user needs, would be a chief development in this decade.

He predicted "distributed intelligence" would be the key concept in information processing technology.

The development of inexpensive intelligent terminals and specialized processors will enable users to disperse computing power among peripheral elements of an information system, he said.

Software Compatibility

Compatibility among software systems will still be evolving in the 1980s, his report suggested, as interchangeability will become increasingly possible not only among alternative software modules, but also between microprogrammed modules and hard-wired instructions.

The industry figure voiced optimism for computer users, whose needs "will determine the structure of our information systems, rather than the present force-fitting of user requirements into a general purpose centralized monolith computer."

'Special Needs'

Other speakers at the triennial meeting of international computer experts discussed applica-

(Continued on Page 2)

A Naked What?

Kathleen Hill's husband is getting his E.E. at Stanford, so naturally he went to Wescon in San Francisco last week, and took his wife along. Mrs. Hill, who says she knows nothing about computers, was treated with a view of a Naked Mini, as well as other electronic delights. More Wescon coverage on Page 19. (CW Photo by E.D. Lundell).

'Synchronized Sort' Halves IBM Timings

By Don Leavitt
Of the CW Staff

TEANECK, N.J. – Sorting with conventional utilities has been estimated to take 30% to 70% of the average installation's time. Benchmarks run recently on an IBM 360/65 indicate, however, that a disk sort package from an independent vendor takes about half the time of IBM's OS-based SM1 or SM-023 Sort/Merge packages.

The Synchronized Sort from Whitlow Computer Systems Inc. selects the best uses of available resources for a particular sort requirement. The user may also supply a parameter to have either throughput time, CPU time, I/O time, or a number of I/O accesses optimized.

If throughput is optimized, the Synchsort is warranted to be unbeatable by other commercially available sorts, on a one-for-one comparision.

Users may cancel their leases with Whitlow if another sort capability outperforms Synchsort on any normal sort requirement, given identical environments and at least 50K of core in which to work, Whitlow said.

The new sort executes very close to the theoretical limits of random access sorting for a specific environment, according to Whitlow. A patent is being sought to cover the concepts.

Benchmarks run at a user's installation were impressive exhibitions of Whitlow's understanding of sorting. In one instance, calculations based on IBM's manual indicated that a sort would take 120 seconds. Whitlow modified IBM's package and ran the test in 64 seconds. Using Synchsort, the same job was done in 34 seconds.

The Synchsort package includes a simulation program with which the user may determine the effect on timings of possible optimization patterns and other variations of resources made available to the sort. A timing program is more useful than charts or tables, Whitlow said, because of the number of variables the user may wish to consider

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Freeze Finds Lessees Lucky

Nixon Plan Benefits Some Users

By Edward J. Bride
Of the CW Staff

WASHINGTON, D.C. – Some computer users will not face price increases for at least another five months, if they have the fairly standard "advance notice" clause in their lease or maintenance contracts.

The clause provides a 90-day warning on price increases, and since these increases cannot be announced during the wage-price freeze, companies which have not already announced them will have to wait before implementing planned upward changes.

Late last week, however, it was still unclear as to when the lease and/or maintenance increases already announced by IBM, Honeywell, and Univac could go into effect. Government officials had no guidelines as to whether "new" announcements, and therefore new 90-day notices, would have to be issued.

Computer industry sources were privately guessing that some controls would live beyond the scheduled end of the freeze, Nov. 12, but most doubted the freeze itself would be extended.

It appears any third-party companies affording the advance-notice protection to their customers will also have to forego price increases after the freeze, until the additional warning period has expired.

180 Days, Not Just 90

While industry officials were speculating on when they could announce new price actions, an official of the Office of Emergency Preparedness (OEP) told CW that customers with the 90-day clause had in effect 180 days of price control, not just the 90 days announced by the President.

Most manufacturers, including IBM, Honeywell and Univac, have the clause in their standard contracts, but uncertainty now stems from whether the "advance notice" has legally been given, sources indicated. The three manufacturers all announced their increases just before the price freeze went into effect.

Additionally, IBM had announced immediate in-

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'Underdeveloped' Lands Need DP, Ifip Congress Told

CW European Bureau

LJUBLJANA, Yugoslavia – "Develop the Underdeveloped" is a phrase readily open to a number of interpretations. As the theme of the Ifip '71 Congress here last week, it was interpreted in two ways: first, and perhaps most importantly, as a platform from which Ifip could continue its primary function in the dissemination of knowledge, and, second, as a political platform through which an attempt could be made to pressure various governments, the UN, etc., into creating a means of bringing the benefits of computerization to the developing countries.

Yugoslavia is perhaps an ideal country in which to debate the need for computerization within developing lands. As a leader of the third world powers, it seems almost proud to rank itself as a developing nation.

As it suffers few of the restrictions applied to trade between the East and West, it is able to identify quite well with the developing countries of Africa, South America and Asia.

Its problems are the same – a lack of foreign currency with which to purchase computing equipment from outside, and an educational backlog, creating a manpower problem in many ways more acute than that of the developed countries.

Two sessions of the conference, in particular, served to highlight these problems of the developing nations.

The first, an afternoon symposium, gave a platform to a number of speakers from the developing countries – including Yugoslavia, Nigeria, and Mexico – who gave case studies of their own countries' problems.

Over and over again the theme recurred: There is a great demand for education in computer science at all levels in these countries.

This theme was taken up at an evening session charied by Issac Auerbach. Its main purpose was to discuss the implications of the UN Secretary General's report on "The Application of Computer Technology to Development."

Like most politicat proposals, the UN document suffers from a lack of time scale. But the need for action now was not lost on the speakers or attendees.

Computers, it was claimed, would form the basis of the world's third largest industry within a decade and their impact on all societies could possibly be greater than the impact aircraft had on transport. Development of a country could be impossible in the future without a strong backbone of computer science.

And so it becomes essential, Auerbach said, that the proposals of the UN Secretary General be assisted by any action possible from the computer industries of the developed countries.

User Needs to Be Matched in 70s

(Continued from Page 1)

tions, technical developments, and special needs of varying systems.

John Gosden, vice-president of the Equitable Life Assurance Society of the U.S., said the most needed extension in computer data management systems are facilities to deal with bad data – either missing, erroneous, or inconsistent.

The British-born systems expert proposed three such facilities for a "simple but powerful" management information data bank:

- A method of marking bad data with qualifiers, to show missing items, as well as items which failed screening checks
- A method of specifying rules to construct alternative data to be used when the source data is marked as bad
- A method of annotating data to indicate the less-than-perfect quality of items when alternative construction rules have been used

While automatic updating of some systems is desirable, the user must make "sensible pragmatic decisions" to avoid keeping the data bank in a "perpetual frantic construction activity," he said.

Makers, Users Await Fed Freeze Findings

(Continued from Page 1)

creases in purchase prices, and Honeywell said new lease and maintenance contracts would be increased at the time of its pre-freeze announcement. Their ability to implement the increases depends on whether any "substantial" sales took place before Aug. 15, OEP indicated.

Neither company would comment on whether this type of business had been transacted (whether cash had actually changed hands), but an IBM source said the company was continuing to take orders "for future delivery" based on the recently announced prices.

A company official said IBM had done a "sizeable" amount of business under the new prices announced July 28, and expected that "additional guidelines" would clarify matters. "If any questions still remain, we would raise these points with the government."

He said IBM was examining the price freeze "from every angle," but acknowledged the company had "not been in contact with the government at this point."

At Sperry Rand headquarters in New York, Univac's parent, Vice President and Treasurer Alfred Moccia acknowledged the scheduled Nov. 2 price increases would be at least delayed, and suggested some government controls would probably continue after the freeze thawed.

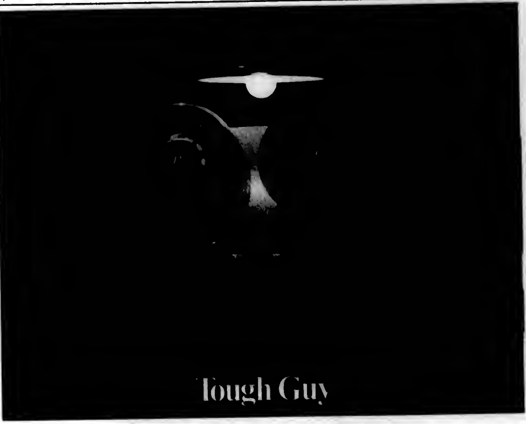
He said it would be "poor strategy" for the government to extend the entire wage-price control as it now stands, but no industry sources could describe exactly how it now stands.

Honeywell wasn't certain of the disposition of its planned November increase, nor could officials elaborate on any possible "new" lease or maintenance agreements reached before the freeze went into effect.

The uncertainty will only be resolved when the government decides two issues:

- What is the definition of the "substantial" business required prior to Aug. 15 to justify keeping increases announced and effective before that date?
- What is legally a business transaction under terms of the freeze?

This latter question applies to computer users in particular, who are accustomed to filing "intentions" to acquire systems so they can get on vendor waiting lists. While these documents put the procurement process into action, they are cancelable, do not usually require advance deposits, and are not binding.



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2 Million HFC Customer Records

'DP Serves, Not Rules, Finance Operation'

CHICAGO, Ill. – Karl W. Fruecht is totally concerned with data processing, a fact that was not always the case. Formerly a field man for his company, as salesman, then manager, and finally as marketing man, data processing is a recent addition to Freucht's career: a whole

DP Profile

new set of skills for a man charged with building and operating a real-time, on-line network of vital importance to his company.

Fruecht is now vice-president of Household Finance Corp., and general manager of HFC's Orbit Division (on-line, real-time, branch information transmission).

He led the feasibility study on automating the branch office operation. The report "totaled 30 man-years of study and produced documentation seven inches thick," Fruecht said.

As a result of that study, Orbit is now in Household Finance. More than 2,000 HFC branch offices in the U.S. and Cana-

HFC's Sue Adler connects to Chicago on a custom-built terminal with a split platen that prints both branch office and customer records.

da are linked to a central computer complex in Chicago.

"In 30 years," Fruecht said, "our branch office operation didn't change. But state and federal regulations changed, imposing new reporting criteria and regulatory retention of records. Home office management was also superimposing reporting requirements on the branches to be able to control a major, decentralized operation.

"All of this was adding paperwork to people at the branch level, out where the real work is, in effect, sales."

Now all the various reporting procedures and computations are done for the branches by two IBM 360/65s, with a 50 for back-up, in the Chicago center, which is the Orbit system Karl Fruecht built.

DP Conforms to Operations

The system took Fruecht five years to build. Most of that time was spent planning, which evolved from thinking: "This is how an HFC branch must operate, adjust DP techniques to conform to that," not "this is how DP wants to do it, adjust the branch operation accordingly."

The study, with HFC and IBM teams out in the field for a full year, developed the design for the system and its operation.

First of all, Fruecht and his people wanted a special, "branch-oriented" terminal, a device specially manufactured by IBM from HFC specifications. With a split platen, the Orbit terminal can accommodate both the printout paper and the customer's own record book.

A transaction on Orbit now provides the branch with its records and the customer with his, but does all the figuring of the dollar involvements, too. The computational abilities of the system, Fruecht said, is saving HFC from dollar losses caused by human mistakes.

The immensities of the programming were staggering at first glance, Fruecht said. Not only were there 2 million customer records to be installed, there were over 400 different "law records" to be included.

The system had to be able to correctly compute every financial transaction made by HFC and it customers – regardless of the state laws involved and the type of transaction.

Using a satellite to link with Hawaii and Alaska, Orbit, as a network, is complete. It was developed at a $17 million cost to provide the HFC customer with a speedy, accurate, foolproof system of doing business and to provide HFC with all that plus a savings in branch operation costs.

But with Karl Fruecht, Orbit is just beginning. He can see the day when his system will be providing HFC branches with computer generated reports that still, even now, consume hours of their working day.

He can also see the "knowledge" of state finance laws in his system, its terminal with "branch office orientation" and a vast network of communications being of service to other corporations.

He has convinced his management of the feasibility of making Orbit commercially available, and now a man without a DP background directs a system he built upon the needs of other non-DPers, and is taking a proprietary system out into the marketplace as a commodity.

And all the while Orbit does for his company what Fruecht believed it would while he is planning for it to do even more.

French Railroad Cars Kept Busy

PARIS – Full utilization of cars and wagons in the French railroads is ensured by the daily input of status reports from over 1,100 terminals to the central computer. Olivetti TE 318 terminals in 200 information centers transmit over 110 million characters each day to center Univac computers.

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AMPEX

FBI System to Start Despite Dispute

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protested on two other grounds besides privacy: the FBI is a police agency while the primary users of the data are correctional agencies, and the FBI is a federal agency while the users and suppliers of data are state agencies.

Massachusetts, for example, has temporarily refused to participate because of objections relating to privacy and control. The state hopes to influence others to hold out and thus force changes on the system.

FBI control of NCHS was not originally planned. In 1969, Project Search, a federally funded 10-state group began to develop a computerized criminal history system, which was tested last summer.

Last December, Attorney General John Mitchell took the program away from Search and gave it to the FBI [CW, Dec. 23]. Search, now expanded to 20 states, remains only as a funding agency for converting criminal histories to computer form.

As many feared, the change in control has turned out to represent a sharp change in philosophy. Search contained a broad range of interests, including both courts and police, and viewed the program in a broader context, considering all users and attempting to balance the need for data by police agencies against the dangers caused by collecting sensitive information.

The FBI, critics charge, has taken a narrow police-oriented view toward the system.

"Criminal histories are much more valuable to the courts than they are to police; they really aren't used as much by the police either," explained one state official. Yet, he continued, NCHS contains too much of some sorts of data, yet does not contain enough data, for example on bail, that is needed by the courts.

In failing to properly balance needs versus dangers, he continued, the FBI is including data that should not be there. The FBI will file arrests for "serious and/or significant violations," according to its most recent guidelines.

First, the official charged, a "criminal history is a history of convictions, not charges" so that entry should not be made until a person has actually been found guilty.

He again stressed the use of the records by the courts, and declared: "Charges should not be a basis for bail." The official did concede, however, that if a person is arrested for three separate serious felonies, a notation should be entered in the record.

The second problem with the FBI's filing criteria is that too many offenses are included. Data should be restricted to "serious felonies" rather than the FBI's much broader class of "serious violations," the official said.

In this area, the FBI made one attempt to pacify critics by excluding from NCHS the most often cited example of excessive data collection, public drunkeness.

The final target of criticism is the Subcommittee on Security and Confidentiality. "It's a subcommittee of the NCIC [National Crime Information Center] Advisory Board, which just represents police agencies. That group can't be objective," warned one criminal justice spokesman.

Next week, CW looks at the actual structure of the National Criminal History System.

'Synchronized Sort' Warranted

(Continued from Page 1)

Synchsort is control-card compatible with SM-023 and can be used on any installation with random access devices available for working storage.

This sort is said to be remarkably efficient when using only one spindle. A benchmark run with one 2314 spindle and sorting $10x10^6$ characters executed in 5.5 minutes. An IBM sort matched the time, hut required four working spindles. Limited to one spindle, the IBM package took twice as long, Whitlow claimed.

Minimum core requirements for the current OS/360 version of Synchsort is 20K bytes plus twice the size of the input or output buffer, whichever is larger.

The package is availahle for a one-time lease price of $5,500. Short-term leases are also availahle from Whitlow at 1029 Teaneck Road, 07666.

Parameters \ Sort	IBM	Whitlow	IBM	Whitlow	IBM	Whitlow
Characters	$10x10^6$		$2x10^6$		$1x10^6$	
Records	52K		10.4K		5.2K	
Devices (spindles)	4		4		4	
Tape In	80 (sec)	73	17	15	9	7.5
Processing	160	102	30	0.5	19	1.5
Tape Out	100	82	17	18.5	10	12
Total	340*	257	64*	34	38*	21
IBM	558**	——	120**	——	60**	——

* SM-023 With Whitlow Improvement Modifications.
** Based on IBM Timing Charts for SM-023.

Benchmarks at a New York bank compare execution times of IBM's SM-023 as normally used, SM-023 as modified by Whitlow, and Whitlow's own 'Synchronized Sort' package.

News Wrapup

Ruling Thwarts N.H. DP Purchase

CONCORD, N.H. – The proposed purchase of a Honeywell Series 6000 system by the state department of data processing [CW, Aug. 4] has been declared illegal by the attorney general's office here.

The Governor's Council "filed" the computer purchase proposal because the attorney general ruled that improper negotiations had followed acceptance of the Honeywell bid. Under New Hampshire low, state agencies cannot enter into post-bid negotiations and all requirements must be spelled out in specifications issued prior to bids. Acceptance of the improperly negotiated contract would have been illegal, the attorney general's office said.

Rent Calculations Procede Despite Freeze

NEW YORK – It may be just an "exercise" during the wage-price freeze, but the city's Housing Administration has employed a computer firm to perform the computations on more than one million apartments already under municipal rent control.

While the national freeze will obviate any of the systems design or actual computing performed by Computing & Software Inc., the system should help the city administer the rent control program after the freeze is lifted.

The agreement was reached shortly before the freeze was announced.

T/S Theft Testimony Continues Sept. 7

OAKLAND, Calif. –Preliminary testimony in the theft-by-time-sharing case continues in criminal court here Sept. 7.

Deputy District Attorney Richard Haugner said only three of at least five witnesses had been heard during the first three preliminary hearings. The case involves allegations that a programmer, Hugh J. Ward, stole a proprietary program by illegally accessing a computer at Information Systems Design (ISS), a service bureau.

A civil suit charging that Ward's employer, University Computing Corp., approved the alleged wrongful appropriation of the software apparently depends largely on the outcome of the criminal suit, Haugner observed.

Computerized Job Banks Now Number 88

WASHINGTON, D.C. – Eighty-eight computerized job banks are now in operation covering more than half the nation's 85 million civilian workers, and the Department of Labor's goal for the next year is the establishment of statewide job banks systems in all states, according to Malcolm R. Lowell Jr., assistant secretary.

In a statewide job bank system, every local office of the public employment service in the state has access to a job bank. There are about 2,200 local offices in the federal-state public employment service, but any number of offices can be tied into a job bank having a centralized computer. Statewide systems are currently operational in Maine, Rhode Island and Delaware.

University to Continue DP Arsenal Work

IOWA CITY, Iowa – The state Board of Regents' refused to order an immediate end to computer work done by the University of Iowa for the Rock Island arsenal. Pamphlets labeled "Remember the May," calling for "drastic action" were circulated on the campus by students following the Aug. 12 meeting. The regents took no action after University of Iowa President Willard Boyd pointed out that arsenal work is be phased out in two years.

Bridge Players Can Blame 'Machine Age'

CHICAGO, Ill. – Computer-dealt bridge hands at the U.S. summer national bridge tournament here provided players with a new scapegoat for their poor performance.

About 5,000 hands were dealt by the American Contract Bridge League computer to test an estimated 7,000 players here. One couple said: "When we do well, we can praise our partner. When we do poorly, we can blame the machine age."

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Only Product Specs as Input

Program Aids Tool Maker's Cost Control

Special to Computerworld

SOUTH BELOIT, Ill. – Beloit Tool, a manufacturer of special taps, gages, and milling cutters, faced a problem common to most specialty manufacturers: generating time and cost standards for the thousands of variations demanded by customers without maintaining a large staff of industrial engineers, estimators, and cost accountants.

These standards are essential to predict profit margins when quoting against stiff competition and to control manufacturing costs after the order is received.

Computer-Based Business Systems of Beloit, Wis., working with Walter Marshall, plant superintendent, and Don Christians, corporate manager of systems and data processing developed a program for an IBM 1130 that automatically generates time and cost standards using only product specifications as input.

Series of Decision Rules

The program involves a series of decision rules to select the required operations and machines to be used in the proper sequence. Then the program retrieves a set of formulas for these operations and computes setup and run time standards as a function of dimensions, tolerances, etc. given in the specifications.

Time to grind the diameter of a tap, for example, is a fixed time of 22 seconds plus an amount of time directly proportional to the diameter and thread length.

Below a certain size, in this case .132 in. diameter, the time remains fixed at 32 seconds. Finally, a separate standard for setup time is estimated for the operation, and all times are expressed in decimal hours. Box contains the formula for this operation.

Formulas for each operation were similarly developed relative to the product's specifications and the machining methods used. The formulas for some operations become quite complex.

Setup Hours	Run Hours/Piece
.05	Die over .132 in. → .006 + .008 x Die x Thread Lgth
	Otherwise → .009

Thread grinding, for example, involves non-linear functions of diameter, threads per inch, thread length, number of leads, tolerance, and thread type.

Costs of material and outside processing are also computed, and time standards are automatically extended by current labor and burden rates and summarized as a total cost per piece for the order.

DP Scores Soarers

PHOENIX, Ariz. – Competitors at the North American soaring championships were kept posted on their standings by a computer.

Contest officials estimated using a computer saved more than 100 man hours work during the meet, and "also heightened the meet's competitiveness by providing accurate position standings on a day-to-day basis," according to Robert Howard, scoring director.

Data on the events was transmitted each evening and individual standings of the 34 sailplane pilots were available at the briefing station the following mornings. The computer also was used to solve complex triangulations arising in speed and distance events.

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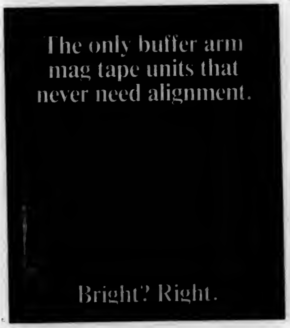

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Editorial

Crackdown Coming

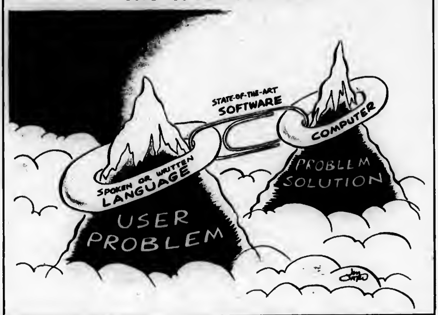
Some companies, whether by accident or design, are raking in a bundle of extra money be sending bills out so late that consumers can't pay them before a credit charge is slapped on.

Consumer complaints have brought a warning from the Federal Trade Commission that the practice may be interpreted as a violation of the Truth in Lending Law.

In cases where bills are mailed out late because of the time lag between the close of a billing cycle and the time the input is ready for the computer, the answer may be to go to a longer billing cycle. After all, the one-month cycle is simply a holdover from the days when bills were always prepared at the end of each month.

Look at it this way: the alternative to a 34-day billing cycle may be a crackdown by the FTC and the levying of heavy fines.

The Weakest Link



Letters to the Editor

Where Was Word 'Physical' In DP Security Headline?

Given his background and experience as a security officer and consultant, one suspects James H. Johnson would (as I do) prefer that the word "physical" be inserted in the headline "DP Security Needs Not Unusual" [CW, Aug. 11].

With commendable conciseness Johnson makes the case for a common sense and knowledgeable approach to physical security for DP.

But I am sure Johnson would be quick to agree that a total security program for a DP facility, including an acceptably high probability of timely processing and protection of data against misuse or wrongful disclosure, must be based on a comprehensive analysis of both the security needs of the facility and all the hazards to which it is truly exposed.

Robert V. Jacobson
President
Bradford Security Systems, Inc.
New York, N.Y.

Throughput Differences Dependent Upon CPU Traits

It should be perfectly obvious to Alan Taylor, CDP, that a comparison of two systems [CW, Aug. 4] which differ only in their CPUs will result in throughput differences dependent only upon the characteristics of those CPUs, a very "relevant" piece of "information" for human processing.

Further, his conclusion that users should ignore both IBM's claims, and possibly therefore IBM's products, can be applied equally well to his ability to provide objective reporting.

If Taylor is really interested in 50/155 comparisons as systems, he should contain himself until a 155 with a 3330 via block multiplexer and rotational positional sensing is available. Or maybe he feels they're not "relevant" to throughput.

Roy W. Fileger
Orlando, Fla.

Taylor said simply that the work streams were not relevant because they were not representative of real-life situations. Ed.

Perhaps 541/073 MBI Was Delivered Early

After seeing the picture accompanying the article, "145 Delivered" [CW, July 14] I was wondering perhaps the reason Stanford University received its computer seven weeks early was because it was not really an IBM 370/145, but rather 541/073 MBI as shown in the picture.

Benedict Licata
Technical Consultant
Blue Cross of Western New York
Buffalo, N.Y.

The negative accidentally got "flipped" at the printer's. Ed.

Taylor Impaled on IBM?

Tell Alan Taylor that he is in the process of impaling himself on IBM as many others in the past have done.

I don't bother reading his articles anymore – I know what they are going to say.

It's a shame; he's a brilliant man and I have enjoyed and learned much from him in years past.

William H. Payne
Assistant to the Director
Administrative & Computer Services
Lockheed-California Co.
Burbank, Calif.

OCR Unit's Price Questioned

In reporting on the new CDC optical character reader, [CW, Aug. 11] the purchase price was reported to be $24,500. This gives a purchase/lease ratio of 13 months. Should the price have read $124,500?

Bruce W. Baker
DP Department
The Travelers
Hartford, Conn.

Price should have been $44,500. Ed.

Trouble With Documentation Is It's Too Much Work

By E. Michael Shays
Special to Computerworld

A study of the sources of problems in project implementation points to some system of documentation as a major cause of project overruns. The old adage that you can't have too much documentation is not valid. Some documentation systems are actually so cumbersome that they are counter productive.

As a communications tool the current level of documentation in most firms today is a poor example of getting out the word. What is written is either so sketchy it is virtually useless or so technically involved the ordinary layman will not read it.

Consequently the managers who must direct, approve and eventually use systems designs do not really know what has been proposed until half of it has been implemented. Changes at this point invariably result in delaying the project.

Documentation Communication?

The problem is those who write documentation don't view it as communication. They make no effort to identify their audiences and write to them. Instead they write "for the record" in language, form and style suggestive of a cross between a legal brief and a military code.

Frequently those who require documentation are quilty of encouraging this state of the art by establishing standards which are so time-consuming to follow that writing documentation becomes a project in itself instead of the means to an end.

Is the answer to eliminate all attempts at documentation?

No documentation is worse than a little. But a great deal can be done to ensure thorough and complete documentation which is readable, understandable, easy to use, and best of all, easy to write.

I suggest these nine guidelines:

- Write to somebody. Think of your reader and his level of interest. Write with his interest foremost in your thought.
- Write to achieve something. Think of what your documentation is to accomplish and make every word count toward that action. If your reader is bored or confused you probably forgot his level of interest.

If he comes away impressed with the buety of your documentation you probably overwhelmed him with irrelevant material. If he gets your point and feels confident he knows what to do about it, only then will you have done your job.

Viewpoint

- Recognize documentation reaches different audiences and serves different purposes. Most of the time you can solve this problem by writing separate guides; the operating guide (or run book) for computer operators; the user's guide (or procedures manual) for the first-line supervisors and their workers; the system specifications for the programmers.

But remember the department manager who will use the system must be able to understand the system specifications as well as the user's guide. Since programmers understand layman's English, write the specifications in simple, nontechnical terms.

- Elevate documentation writing to a line or operational function. It should be, actually, the natural conclusion of a project task rather than a separate and distinct task.

All tasks might start with an action verb and end with some physical evidence of completion. Generally this evidence is a written statement of a finding or conclusion. The final documentation is a compilation of these written statements.

- Follow a uniform format. Vary the words to fit the situation but follow an established sequence of findings and conclusions. This not only assures that all items will be covered, but enables easy refernece of the documentation during the action phases.
- Avoid a myriad of forms. These often are intended to simplify but can complicate and fragment the issue to be acted upon.

Few forms are well designed and properly controlled, and forms generally require some sort of instruction in their use. This restricts the audience and limits the effectiveness of the documentation as a whole.

- Write according to accepted standards of English usage. Use complete sentences except when listing a series of functions, objectives or procedural steps. Keep statements simple and succinct. When describing a procedure, use the "cook book" style with the subject "you" implied: Do this. Do that. Do this again.
- Use the standard collegiate outline system of IV, B, 3, a, and so on, instead of the technical 2.2.13.1.5 format. Avoid the use of (a), (1), iii, etc. A simple indented dash (-) or dingbat (.) will do handsomely to set off a minor series of points.
- Take pains to name records, files, input forms and reports logically and simply. Then use these names consistently throughout the documentation. Nothing is more frustrating to a reader than having to keep track of a jumble of overlong names and aliases.

E. Michael Shays is executive vice-president of Payne Computer Services, Inc., New York.

Balancing the Balances: A Columnist's Responsibility

One of the types of letters I get charges me with being unbalanced in my reports. Sometimes they suggest I am spending too much time with ethics, or with Cobol, etc., but more generally they argue that my comments on some company, or person or association are unfair.

The Taylor Report
By Alan Taylor, CDP

Often they specifically agree with the facts involved. But still, they argue that I should have mentioned this or that other item, or that I should not have reported the event at all.

Naturally, they give a reason for their argument. Normally this is "journalistic responsibility" or "professional integrity" or some other such phrase. Sometimes it is more bluntly put as a threat to stop reading the columns, or to stop believing what I write.

And often they assume I must naturally agree with them, which is a pity, because I don't agree with them at all.

Typical Information Trap

Not because I haven't read their letters, or consider their point of view. Much more because I have read them, and have considered both what they say and also what they don't say. And in particular because I think they generally have fallen into a quite human-type of information trap which also often wrecks advanced data processing systems.

This seems to be something that may interest readers both personally, in case you have thought my coverage unbalanced, and professionally as it adds up to another standard data processing problem.

Let us take a typical case – (which in the current phraseology is a "composite" coverage, made up of specific events in a number of different but similar cases) and let's consider what types of column could be written about it. And whether or not they are unbalanced.

Once upon a time the chairman of a large computer company was about to make a speech, all about the great future of his company. As he was getting up to speak, he turned to his director of product planning, and asked him whether a new direct-access system under development would outperform the competition.

Not unnaturally, he was told it would outperform the competition – and he then went on and announced to the assembled crowd both that the new system existed, and that it would be faster than a particular competitive system.

Next day the company issued a release about the wonderful new product, that had pretty full details of the product concerned, physically, and included an access time.

The time concerned had been obtained by taking the competitive access time, and knocking a few percents off it. In fact, it did no more than rephrase the chairman's claim that it was faster than the competition.

But – now it was official.

And for months salesmen thought it was accurate.

And so did buyers, who rearranged their procedures to use this new marvel. First delivery time came – and deliveries were postponed, quietly. Selling, however, went right on.

Engineering then gave up, and passed the problem of when to tell what to marketing, which kept quiet while it seached for a new provable product.

What Should Be Said?

Now, what is the duty of a columnist who finds out that the item, which is still on the product lists, has been abandoned as being infeasible by engineering?

Clearly (I hope) be has the right to report that the specifications are not being met, and have never been met, even though this may hurt the stockholders of the company concerned.

Does he also have the duty to investigate the rest of the company's activities? Should he, in his restricted space, have to recount the wonderful work the company is doing by setting up a factory in Harlem, or the magnificent use of alternative direct access equipment that is promised for one of the company's operating systems?

Should this be done in any case – even if the column may be delayed or not published as a result of the delays? Or does this duty exist if in fact he already knows about the various good sides to the company whose product specification failure he is reporting on?

Decide for Yourself

Why don't you pause for a minute, and think out the answers to these questions. An unannounced product specification failure has occurred, and a columnist is panning the company concerned. Answer *yes*, if you think he has a duty to bring out the good points about the company anyway; *yes if*, if you think be should if he knows about them; and *no*, if you feel he need not cover such areas.

My Answer

Now that you have answered *yes*, *yes if*, or *no*, go back to the last 14 words of the previous paragraph which read: "The various good sides of the company whose product specification he is reporting on."

Because there lies the clue. The columnist's report is primarily on a specific interesting event – in this case the failure of the product specification. It is *not* on the company, nor on the usefulness of the direct access system concerned *except* as these affect the failure of the product specification.

Relevance the Test

Balanced reporting therefore calls for inclusion of material relevant to the failure of the product specification (such as previous failures, company reactions in the past, the number of installations waiting for the system, previous clues that a failure could be expected etc.). But nothing more.

Why This Confusion?

Why, then – and this is the real question – do so many quite sincere readers ask for the inclusion of material that would be relevant if the subject of the column was the company itself, and not just a particular event?

Subjects Exchanged

The answer is a human one. These readers are more interested in the company concerned than in the particular event – and in their own minds failed to realize that the company was not what the column was about. They happened to put a higher priority on the company than the event.

And so they exchanged subjects, giving priority to the more interesting one instead of the less interesting, just as many users of data processing are confused when they meet high priority words like "customer balance" and "pacification level." Users assume these mean the actual, legally due customer's balance, or the actual situation in areas of disputed control in a war. Users assume that *unless they are told otherwise* an entry will represent what is, to the user, the most *interesting* fact.

DP Problem

And like my correspondents, this assumption results in being misled when the computer-produced data represents something fundamentally different – like "The bills we have posted, but not the credits" or "Pacification levels reported from the field" and other intermediate, less interesting data.

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CDP Society Structure

Returned enrollment questionnaires revealed that more than 70% of the charter members of the Society of Certified Data Processors favor an organization under "grass roots" control, rather than one under an executive director or a committee.

However, there were enough double votes and write-in votes for both grass roots control and an executive of some sort that the latter position had to be considered. The consensus was that the executive should act only in routine day-to-day matters. One member argued that otherwise nothing would get done.

Provision therefore is being made in the incorporation papers for such a limited executive.

The members also voted to use CW as a medium for the quick exchange of information of general interest and for a newsletter at least quarterly for communicating information primarily of interest to members. Accordingly, the $15 annual society fee will include $6 for a personal subscription to CW. Rebates will be made by the society to members who already have a subscription. New subscriptions will start in about eight weeks.

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'Professional Societies,' Not Bema, Plan Conference

WASHINGTON, D.C. – The Business Equipment Manufacturers Association will don a user orientation for the first time by combining with professional groups to present its annual business show at the New York Coliseum, Oct. 25-29.

In an interview here, C. Mathewa Dick, Bema's president, said, "We have, in effect, gone out of the conference business. We feel the true role of the professional societies should be to hold conferences. They know best how to put together and draw in qualified people.

Exhibition Resources

"Bema doesn't really have resources on the conference side that the societies have. We have the resources, however, to put on exhibitions, and that is just what we'll be doing this fall while others put on the conference."

Societies/ User Groups

Four organizations will host the meeting portion of the program, Administrative Management Society, American Production and Inventory Control Society, General Services Administration, and the National Retail Merchants Association.

"We think there's a great community of interest among the professional societies in our business," Dick said.

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'Modular' RPG Course Offered by IBM Group

NEW YORK – Guidance International will give an educational seminar in RPG Programming Logic and Techniques starting Sept. 21.

The sessions will be administered at the IBM Education Center here, but the company did not participate in setting up the "modular" course, Guidance said.

Guidance members use small IBM computers, but non-members are also eligible to attend. Fees are $5 per "module" for members, $8 for non-members.

Modules, seven in all plus a question/answer session free of charge, include courses in basic RPG logic, RPG II extensions, and random disk file processing.

The modular approach to this course will enable attendees to suit "individual needs and desires" at a much lower cost than comparable IBM courses, Guidance noted. Information is available from P.O. Box 537, Lake Ronkonkoma, N.Y., 11779.

Calendar

Sept. 13-14, Santa Cruz, Calif. – Fourth Annual Workshop on Microprogramming. Contact: Dr. Paul J. Friedel, Registrar, IBM Scientific Center, 2670 Hanover St., Palo Alto, Calif. 94304.

Sept. 15-17, Toronto – Canadian Computer Conference Session '71 sponsored by the Canadian Information Processing Society. Contact: Canadian Computer Show, 481 University Ave., Toronto 2, Ont., Canada.

Sept. 29- Oct. 2, Detroit, Mich. – National Meeting of the Institute of Management Sciences. Contact: Harvey A. Shapiro, School of Economics & Management, Oakland University, Rochester, Mich. 48063.

October – Four Seminars on Optical Character Recognition, sponsored by International Business Forms Industries and European Forms Manufacturers Association. 4-5, Zurich; 11-12, Paris; 18-19, London; 21-22, Copenhagen. Contact: Eforma, Baslerstrasse 30, Zurich, Switzerland.

Oct. 4-6, New York – Meeting entitled "Negotiating and contracting for Computer and EDP Support Services." Contact: American Management Association, Inc., AMA Building, 135 West 50th St., New York, N.Y. 10020.

Oct. 4-7, New York – Fall meeting of Honeywell Users Group. Contact: J A. Heald, 6-263 GM Building, Detroit, Mich., 48202.

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More Systematic Approach Seen Needed To Save Brokers From Paperwork Glut

By Michael Merritt
Of the CW Staff

NEW YORK – "We just can't keep processing paper without being drowned in it." The paper is generated by the sale of a block of stock – sometimes over 50 pieces of it for one sale. The speaker is Mickey Felix, partner in charge of operations for Neuberger & Berman, a Wall Street brokerage.

"I think the New York Stock Exchange is doing a good job today; going in, looking, studying. They know what the information processing problems of the industry are."

Two of the most pressing parts of the information glut on Wall Street are lack of standardization, and the need for "locked-in" trades, according to Felix.

The partner was responsible for the development of Neuberger & Berman's own computer system, a batch 360/40, card-oriented system.

Locking-in trades involves using computer accounting techniques to debit and credit brokers for each stock transaction. After a sale is made, no certificates or other piece of paper would pass besides a notice to both buyer and seller that the transaction had occurred.

By doing away with stock certificates – certificates would be available for people who demand them, though Felix feels they would be few – the industry could do away with unnecessary paperwork involved with proxies and dividends. Most importantly, it would eliminate the whole problem of "fails," the inability of a broker to provide a physical certificate within five days after a sale, as he is now required to do.

Hectic Trading

During the hectic trading of a few years ago, a number of brokers found themselves innundated with back-office work, and the rate of fails skyrocketed, causing considerable expense and trouble.

With locked-in trades, brokers would not deal with a number of certificates for specific shares of stock, but with inventories of shares of different issues. In other words, rather than dealing with Brown's 100 shares of IBM and Green's 100 shares of IBM, a brokerage would maintain an inventory of IBM shares, upon which both Brown and Green could call for 100 shares each when they needed them.

The accounting, essentially a warehousing flow problem, could be done by computers, obviating the need for much hand labor, and the mistakes it can produce.

Must Standardize

In order to reach this goal, though, it will be necessary for the brokerage industry to standardize many functions.

Accounting is one example Felix mentioned. "I can look at the balance sheet of a broker across the street with exactly the same entries as ours and have no idea what it really means," Felix said, "because nobody has agreed on a standard chart of accounts."

As an example, he cited unsecured debt. "Someone owes me $100. What do I call it? It's a receivable, so it should be an asset. But it's an uncollected debt, so perhaps it should be a liability. The regulatory agencies have never given the industry a mandatory chart of accounts, only a suggested one."

Felix mentioned the current standardization of securities description as an example of the problems and benefits of making uniform any part of the hodgepodge securities industry. While handling of uniformly numbered stocks is vastly more efficient – and cheaper – the burden and cost of reissuing the shares is making the process slow.

When it comes to instituting lock-in trades, Felix said, the problems will be even more difficult. Not only must the conflicting interests within the security industry be resolved, but the needs of banks, insurance companies, mutual funds, and other large and small investors are going to determine the eventual outcome.

Firm Using DP to Identify, Help Solve Urban Problems

ST. LOUIS, Mo. – The Regional Industrial Development Corp. (RIDC) is using a computer to help identify and diagnose the complex economic, social, and technical problems facing a given urban area, and to match people with jobs and jobs with people.

Using a CDC 3300 at the Yalem Computer Center at St. Louis University, RIDC plans to collect data on this area and develop an analysis program using information from the 1970 U.S. Census and from research from RIDC groups.

The major problem facing the project "is to develop ways of collecting, storing, interfacing, and retrieving the existing data," said Reid Ross, RIDC executive vice-president. Since data has been developed independently by various sources, the problem of compatibility is significant, he said.

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CW-2

Random Notes

Even Software Is Frozen By Presidential Order

CHERRY HILL, N.J. – One of the first software vendors to react to the wage-price freeze, Value Computing Inc. has rescinded an increase in the price of its OS/360 SMF Job Accounting System, which was to take effect August 15.

A Value spokesman explained that the company wanted to comply with the spirit as well as the letter of the freeze. Legal counsel advised Value that since no sales had been made at the higher price, it should be withdrawn. The package will remain at $4,000 instead of jumping to $6,000.

Statistical Cross-Tabulations Generated With 'Marketab II'

DARIAN, Conn. – Statistical analysts using the Marketab II cross-tabulation system from Mnemonics Inc. have a wide range of options for massaging data. Tables can be as large as 25 columns and 60 rows, with horizontal and/or vertical percentages calculated.

The DOS/360 package provides for the calculations of weighted means, standard deviations, variance, and standard error. Users are able to add textual comments to clarify the meanings of various elements in the printouts. Using 65K of core, Marketab II is available for lease or purchase from One Parkland Drive, 06820.

OCR Center Helps New Yorkers Solve Conversion Paper Jams

NEW YORK – Users in the New York metropolitan area can overcome paper logjams caused by conversion or other overload situations through the OCR reading facilities of Chemical Optimation Services Inc.

Cosi claims to be able to read a score of type faces, and to convert the data read to magnetic tape. The system is said to operate at speeds of 2,400 char./sec or 1,200 document/min. Cosi provides pickup and delivery from its center at 770 Broadway, 10003.

Two Nets Support Design Tasks

CINCINNATI, Ohio – A mechanical design analysis library developed by Structural Dynamics Research Corp., has been installed nationwide on the Com-Share network, headquartered in Ann Arbor, Mich., and on the regional network of Applied Computer Time Share Inc. (Acts) of Southfield, Mich.

The SDRC library includes programs to solve complete static and dynamic analysis problems, or to provide for data reduction from mechanical impedance studies. The library also provides for the simulation of systems while still in the design stage.

Compu-Serv Handles Insurance

COLUMBUS, Ohio – The Life Insurance Data Information System (Lidis) is now available on the Compu-Serv Network facilities to provide smaller insurance companies a means of producing policy transcripts, premium cards, premium due notices and other supporting paperwork, as well as date necessary for effective management decision making.

Accessible through terminals at the users' sites, Lidis can be used to generate transaction registers, commission statements, agent checks, payroll journals and reserve listings. Compu-Serv is at 1387 W. Fifth Ave.

'Tips' Handles Btam

TP Monitor Has Terminal Simulation

OMAHA, Neb. – The Dataflex Corp. has developed the Teleprocessing Interface Programming System (Tips) as a generalized line control monitor and an interface with user-written DOS/360 application programs. Tips use of IBM's Basic Teleprocessing Access Method (Btam) is tranparent to the programmer, Dataflex said.

The current version of Tips can support either IBM 2740 terminals, or local and/or remote CRT units. The basic Tips handles inquiries one-at-a-time; a multitasking implementation, also available, enables two or more user programs to operate concurrently.

Tips also includes a Btam simulator, using the console typewriter to simulate a terminal, to provide a means for program testing "off-line" so teleprocessing operations are not interrupted.

The simulation capability also gives the user a chance to test his programs even before the communications hardware has been installed, a spokesman noted.

In operation, Tips is able to screen each incoming message to determine if the sending terminal is authorized to send such a message. If the message is legitimate, it is time stamped, dated and placed on a log file.

The system also determines that files and program phases needed to handle the message are available as it works its way to the top of the queue. The interface is written in such a way that batch-oriented programs are checkpointed, then reloaded after a high priority is processed.

New applications and new terminals can be added, Dataflex said, by extending the table of acceptable message codes, with the pointers to the related files and phases. Existing applications need not be modified as new ones are added.

Application programs may be written in reusable code, in which case the Tips interface will not load a new copy of coding already in core. If the code is not reusable a fresh copy will be loaded, a company spokesman added.

Core requirements for Tips vary with user needs. A typical situation, including 2740 support and control of two lines, would use about 16K, exclusive of application coding. This would provide direct access, index sequential file handling and Btam, the company said.

The Tips package for either 2740 or CRT is available for $6,000. The multitasking version costs $8,000. For either package, Dataflex provides two days of support. Dataflex Corp is at 120 S. 41st St., 68131.

'CPG' Language Generates BAL, Saves 80% of Programmer Time

MINNEAPOLIS, Minn. – BAL programmers may save 80% of the time normally needed for coding, assembly and testing by using the Certified Program Generator (CPG) from Certified Software Products.

CPG is a pre-assembler that translates unique language elements into BAL source code.

Time saved in program development by coding in CPG rather than RPG or Cobol is less dramatic than the savings for the BAL coder, but still significant.

In addition, the BAL code generated by CPG may be expected to be more efficient and more conservative of core than code generated by either RPG or Cobol, the company said.

Elements of the CPG system permit the definition of files and constants to be used. Constants available include accumulators, working storage, literals and edit words.

There are only six basic verbs available to the CPG user, but within each verb's structure are a range of subfunctions.

Users may include BAL source code with CPG code, to provide program logic not available directly through CPG.

CPG output includes TOS/DOS job control cards that allow immediate assembly without programmer intervention. Written in BAL, CPG can be used in 32K on IBM 360, or Univac 9400 CPUs.

The package costs $8,500, but may be leased for three years for $306/mo. from Certified Software Products at 2419 Nicollet Ave., 55404.

'Arears' Aids Collection Dept.

BIRMINGHAM, Ala. – Strong collection department support has been built into the Automated Retail Accounts Receivable Systems (Arears) available from Computer Wares Inc. (CWI) for use on disk-oriented IBM 360 or RCA Spectra 70 CPUs.

Arears processes receivables and generates sales analyses for multiple divisions, stores, departments or salesmen. Each unit may have processing tailored to its needs, CWI said.

The system checks each customer's balance against his credit limit and reports those accounts that have exceeded their limits, on an exception basis, for management review.

Three types of billing can be produced by Arears: end-of-month, on request, or on user-defined cycles. Cycle billing can be used to spread the billing operations, and the anticipated income from the operations, over the entire month.

Arears has been installed and is operational on a 32K 360/30 with two 2311 disks, under DOS, and on a 131K RCA Spectra 70/45 with two 2314 disks, two printers, and eight tapes, under TDOS.

The $10,000 purchase price for the 360 version includes 40 hours of installation support, and a 90-day warranty. Computer Wares Inc. is at 745 N. 41st St., 35222.

Tape Librarians Use 'Tums' To Ease Control Problems

SAN FRANCISCO – Manual preparation of tape library information, including tape logs and labels, is completely eliminated for the DOS/360 user with the Tape Utilization Monitoring System (Tums) from GBG Systems.

Tums instills effective control with minimum operator surveillance, according to GBG Systems. Tape volume status is checked and posted to Tums own file at job execution time.

Validation routines applied to input tape labels can prevent the use of invalid files, and checking procedures against output tape volumes can prevent writing over unexpired data, the firm said.

Management reporting facilities provide cross-referenced lists showing the status of each file set and volume, and files created and scratched during the current day.

Installation of Tums requires no modification to DOS, JCL and the user's application programs, the company said, and the package can be purchased for $2,000 from 260 Kearny St., 94104

Package Handles 2,500 GLs

LOS ANGELES – Banks and service centers can use an extended version of a General Ledger package from Ancom Systems to process more than 2,500 companies with multiple levels of management reporting. The package includes forecasting, budgets, historical data and actual performance analyses.

The system, written in Cobol, requires only 32K of core and three files, including one disk. The $12,500 package is available from 8929 S. Sepulveda Blvd., 90045.

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'Belstar' Tracks Activities

OKLAHOMA CITY, Okla. – The Business Enriched Language for Storage and Retrieval (Belstar) is an on-line file management system, available from Academy Computing Corp. (ACC), that continually monitors activity on designated operations.

Working with user specifications carried in tabular form, and real-time data entered from terminals, Belstar decides when an exception report is needed and to what level of management the report should be transmitted. This activity tracking system, developed for AT&T, could be applied to any situation requiring constant supervision, ACC said.

By sending messages directly to the manager responsible, Belstar enabled one user to meet 99% of the due dates for installation of long lead time equipment. Before Belstar, the user met only 86% of its due dates, ACC claimed.

Belstar has been implemented on a 64K Honeywell 1251 and on a 32K GE 255. Written in Assembly Language, it supports index sequential files and costs $50,000 for in-house use.

Although ACC can provide Belstar as a service, charging on an activity basis, a spokesman admitted users any distance from Oklahoma City might have problems. The system uses dial-up phone lines for outgoing messages, which prevents multiplexing, he said.

Academy Computing Corp. is at 5005 N. Lincoln Blvd., 73105.

IBM Updating DB/DC Systems

WHITE PLAINS, N.Y. – IBM plans to update several data base/data communications packages during the next year. Products affected will include the Customer Information Control System (Cics), the Generalized Information System (GIS) and the Information Management System (IMS).

A new version of OS/360-based Cics will provide support for more terminals, including System/3s used as I/O devices. Time management will allow time-initiated transactions, program access to time-of-day, and control of long-running tasks.

Expanded data base control items that will permit file browsing and dynamic opening and closing of files are also expected in the enhanced version. Binary synchronous dial-up will be supported, a spokesman said.

The DOS implementation of Cics, still to be released, will have the same features added either when it is initially available or during the second quarter of 1972. PL/I support will also be included in the enhanced DOS system, IBM said.

GIS/2 users will be able to interactively query data bases created for use under the batch-oriented IMS/2, through a new separately priced Data Language/I (DL/I) Query support feature. In effect, this will allow GIS/2 to be treated as an IMS application program, according to a spokesman.

IMS itself is to be upgraded in two steps to provide additional terminal device support and to increase the usability of the Data Communications feature. The new version of IMS will support Teletype models 33 and 35 or equivalents, as well as a range of IBM's own display station and audio response units, IBM said.

Version 2, Cics/OS is to be available in January with a subsequent modification level release in May. It will carry a monthly charge of $700 under a license agreement. The DOS Cics is structured in two pieces, for $200 and $500/mo.

The DL/I Query feature for GIS/2 will cost $150/mo beyond the cost of the system itself and will be available in May, 1972.

IMS/2 also comes in two parts. The data base system will cost the user $550/mo, while the data communications feature, if wanted will be an additional $625/mo.

This core memory for an IBM 360/40 has 64K, has nationwide 24-hr. service, smiles sweetly, gives milk and rents for $2180 a month.

This core memory for an IBM 360/40 has 64K, has nationwide 24-hr. service, smiles sweetly, gives milk and leases for $1100 a month.

ICC CorPak expansion memories are available on a plug-to-plug compatible basis for the IBM 360/30 up to 96K, IBM 360/40 up to 256K and the IBM 360/50 up to 512K. At commensurate savings.

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Midwest: International Computer Brokers, 110 S. Dearborn St., Chicago, Illinois (312) 368-4325

Hoskyns Aids Users Designing Programs

NEW YORK – Poor program design, and not inefficient coding, is the main reason many users fail to gain the maximum benefits from modular programming, according to Hoskyns Systems Research. To correct this problem, the company now offers a Program Design Service (PDS) for 360 users.

Conceptually, modular programming is a building block approach to program design. By segmenting the program properly, the user may benefit in two ways.

The segments, or modules, can be written, assembled and tested independently of each other. In this way, debugging of individual parts is not delayed until the entire program is written.

Carried further, modular programming should allow a user to add new features to an existing, operational program, as the need arises and/or the module is completed.

Under PDS, Hoskyns designs programs and produces detailed module descriptions from the user's program specifications. Without doing the coding itself, the company pinpoints what should be done in each module.

In addition, Hoskyns documents its design strategy, comments on the overall system design, and offers advice on coding approaches.

Cost of PDS varies with the complexity of the program to be designed and the condition of the user's specifications. A typical project, resulting in a 2,000 statement Cobol program, might take six days and cost $1,000 to $1,500, a spokesman estimated.

Hoskyns is at 964 Third Ave., 10022.

Basic Users Talk to Files Through 'Gossip' From MSC

DENVER, Colo. – On-line files can be scanned, updated, sorted or used for reports by users with access to a CPU supporting extended Basic, through the facilities of the Generalized Organizational System Summarizer and Information Processor (Gossip) package from Management Systems Corp. (MSC).

Intended for the non-EDP businessman, Gossip permits the layman to put files in storage, update and make inquiries by giving simple English answers to questions printed on his terminal.

Gossip is a modular system. The largest module requires not more than 2K of core. The system can be installed on a user's in-house installation or on the time-sharing service of his choice, MSC said.

It is available for minimum lease period of six months, at a cost of $100/mo plus a charge for storage. MSC is at 1113 S. Monaco Parkway, 80222.

Bits & Pieces

IBM Makes 370/145 Growth Field Installable Change

WHITE PLAINS, N.Y. – For those of you interested in top-of-the-line 145s, you can now get 512K via a field installable model change from 384K. Previously users had to get a new main storage adapter, a box and power supply for it, and an adapter extension. The 384K and 512K 145s will be shipped in November, four months ahead of schedule.

ITT Unit Freezes Prices

EAST RUTHERFORD, N.J. – ITT's Data Equipment and Systems Division has begun guaranteeing its lease rates for one year from date of acceptance. The division makes displays, printers, modems, and terminal equipment.

Business Terminal Costs $975

NEW YORK – Responsive Business Machines' Model 310 desk top business terminal has an adding machine keyboard and eight function keys, as well as built-in tape cassette drive and acoustic coupler. The terminal can be used for off-line data entry, local storage, and transmission. Single unit price is $975. Responsive is at 871 Seventh Ave., 10019.

Another Computer-Calculator

TEWKSBURY, Mass. – Wang's new Model 520 desk calculator is just barely a computer in stripped-down form; it can run programs of 312 program steps. By adding an optional tape cassette drive, however, the length of program goes up to 16,000 steps.

With 312 steps, 39 storage registers, and 16 full registers, the 520-2 costs $2,500. For $300 more a user can increase capacity to 824 steps and 103 storage registers, and gain a random access extended memory.

Wang Laboratories is at 836 North St., 01876.

More Core for the 360/40

CULVER CITY, Calif. – Ampex is now offering a main-frame add-on core memory for the 360/40. A direct replacement of native core, it is priced 20% below IBM, according to Ampex, when taken on a two-year lease. Ampex will sell 360/40 core from the IBM minimum of 64K to the maximum 512K. A 64K module from Ampex costs $1,280/mo on a two year lease. The monthly rental from IBM is $1,600 plus overtime charges. Delivery is in 60 days.

Ampex Corp. is at 9937 W. Jefferson Blvd., 90230.

Up to 3,000 Line/Min Alpha

Independent Drum Speeds NCR Printer

BRADENTON, Fla. – Using a drum made by an independent supplier, the NCR 640-200 Printer can be run in alphanumeric mode at up to 3,000 line/min. Electronic Data Preparation Corp., the maker of the drum, says this is the fastest line printer available to the public.

At 3,000 line/min, the 132 col printer can handle full alphanumerics and the comma, period, and dash signs.

EDP Corp. also makes a drum for the NCR 640-210, a 160 col printer, that gives it upper and lower case alphabets, 10 digits and 18 symbols at a speed of 1,500 line/min. The output is letter or typewriter quality.

Both NCR Century printers are rated by the maker at 1,500 line/min maximum. At that speed, the 640-210 produces less than letter quality output with a smaller character set.

The two drums are called Sprint – for 3,000 line/min – and Scribe, for high quality, 1,500 line/min output. They were developed by EDP Corp. with the cooperation of NCR. They are interchangeable with the native NCR drums.

Drum capacity has been increased from 64 to 72 rows. Changing drums takes less than two minutes, EDP Corp. said.

Included in the Scribe package are the drum, storage case, a code disk, and software routines which direct the character sharing and overprinting necessary to generate a 78 char. set.

The Sprint drum duplicates the most frequently printed alpha characters and arrays them by probability of use. It can print two lines in a given drum rotation.

According to NCR, this gives it printing speeds 33% to 100% greater than the original NCR equipment, depending on data base. In a 72 row drum, 33 char. are duplicated, while the remaining six rows are for infrequently used alphas.

The Sprint package is similar to the Scribe, and it includes software routines which purge the print line of any but the 39 char. actually represented on the drum.

The type faces of the drums were designed to compensate for distortions that occur during high-speed printing.

The drum packages cost $10,000 each, and can be rented for $350/mo. on a one-year contract. Other terms are available from P.O. Box 1446, 33505.

NCR sells the printers the drums go on. The 640-200 rents for $950/mo, and the 210 for $1,050/mo.

$51,000 Business System Offers Disk File and Multiprogramming

EDGEWATER, N.J. – Ultimacc Systems has added disk and other capabilities to its integrated business accounting system. When first announced, the system was built around a tape cartridge mass memory.

Both systems use a minicomputer and a 30 char./sec keyboard printer designed for accounting use. The removable disk pack has a basic storage capacity of five million char. This may be expanded to 20 million char.

A real time operating system for the Ultimacc allows a maximum access of 15 I/O devices to the mini in a multi-programmed environment.

Average access time of the disk is 70 msec, and data transfer rate is 1.56 million bit/sec. The mini has a minimum core of 16K (bytes), which may be expanded in 8K increments to 64K. It also has automatic program load and automatic power restart.

The keyboard printer has a split platen, direct tabbing, and a front form feed. It can perform three accounting functions simultaneously.

Common Business Package

The software library includes applications for accounts receivable and payable, payroll, inventory control and stock status, management information, cost accounting, and the general ledger.

The packages are designed for the most common business accounting situations, the company said. It is a turnkey system and requires no DP expertise on the part of the user. Basic sale price includes a training course for the operator.

Base price of the disk system is $50,900. Options include CRTs, line printers, telecommunications interfaces, and other peripherals. The basic tape system sells for $42,500.

The system does not require special power or environmental conditions, the company said. The automatic power restart feature is important to users in areas where brownouts are common.

Ultimacc is at 1064 River Road, 07020.

NCR Ties OCR to Tape Drives To Read Cash Register Tapes

DAYTON, Ohio – A new tape drive for converting optical-print cash register and adding machine tapes to magnetic tape, the NCR 739-103 is a 9-channel 800 bit/in. drive and is linked with an NCR 420-2 OCR scanner.

Systems for converting NOF (NCR optical font) cash register tapes to magnetic tapes are used in retailing. Several types of NCR optical-print cash registers produce, as a by-product of recording sales, machine-scannable "journal" tapes.

These are read at the central data processing facility by an OCR scanner which can be either on-line to a computer or in many cases interfaced with a tape drive for subsequent off-line processing.

Adding Machines Use NOF

NOF tapes are also generated by optical-print adding machines throughout business and industry.

First deliveries of the new tape drives are scheduled for this fall. The NCR 420-2/NCR 739-103 conversion system sells for $91,000 or can be rented from $2,050 to $2,450 a month depending upon the length of the rental contract.

NCR will also upgrade 420-2 conversion systems which use the predecessor 739-102 unit. The conversion price will be $5,000 or an additional $150 per month rental.

Remote Terminal Cost Decreased by Hetra

MELBOURNE, Fla. – Price of the basic Hetra remote batch terminal has been lowered to $20,000. Maintenance on the unit is $200/mo. The terminal consists of an 800 nsec processor with an 8K (byte) memory, a 300 card/min reader, 300 line/min printer, communications console, and 2400 bit/sec modem.

Available software emulators allow the terminal to replace the IBM 2780, the CDC User 200, and the Univac 9200 and IBM 360/20 packages. Options include faster printers and readers, disk, magnetic tape, CRTs, card punches, cassette recorders, line multiplexers, and various utility packages.

Hetra also offers its own business language compiler, PWL.

Hetra is at Box 970, 32901.

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Viewpoint: Is Silence Golden?

IBM Called 'Low Profile' Regulatory Participant

By Ronald A. Frank
Of the CW Staff

Should IBM get involved with proposed tariffs that can raise the phone bills of computer data users? Well that depends on who you ask.

Officially, IBM submissions to the Federal Communications Commission and the various state regulatory agencies are very limited. One of the few times IBM took a postion before the FCC was in the computer communications inquiry several years ago.

More recently, IBM was present but silent at the California Public Utilities Commission's prehearing conference that will explore the causes of "unusual usage" of the state's phone system. Also on August 6 IBM told the FCC that it "wishes to participate in the working committee" to develop standards of service quality for the new specialized common carrier services.

And earlier this year during hearings on the Isal proposal of Illinois Bell that would have raised rates for intrastate data users, IBM had silent representatives at each session.

So although there obviously is corporate interest in major regulatory data-related issues, the industry leader maintains "a very low profile," according to one observer. "They keep their exposure very limited," he told CW.

But does IBM have an obligation to its users who are affected by proposed changes in communication tariffs? Some think not.

An industry spokesman said a firm need not have a policy concerning such matters. Telephone rates are a problem to be settled between the user, the phone company, and the appropriate regulatory agency, but not the equipment-supplier, he said.

Small suppliers of data equipment disagree. A case in point is the recently formed Independent Data Communications Manufacturers Association Inc. (IDCMA).

As its first project IDCMA formally told the FCC that proposed interconnection requirements for voice grade private lines would adversely affect data users.

On the same issue IBM was, at best, indirectly represented. The FCC did receive a letter against the AT&T proposal from the Business Equipment Manufacturers Association (Bema) of which IBM and most other computer suppliers are members.

"IBM is an active member of our Data Processing and Telecommunications Committee," a Bema spokesman told CW. "We have been very happy with their participation," he said.

Asked whether IBM or other mainframe companies had a policy on participation in tariff problems, the Bema spokesman said if they had it was not apparent. Most of the firms take a stand as they see fit, he said.

Others are more emphatic about IBM's Bema role. "They are a hawk within the trade association," one source said. He added that the industry leader "carries a lot of weight and contributes considerable sums" within the organization. A Bema spokesman denied this and said each member participates equally.

One of IBM's reservations against taking a more open role may lie in its antitrust restraints imposed by the Justice Department. "IBM does not want to give the appearance of attempting to formulate industry positions," one source told CW.

Others feel that IBM has too much at stake to challenge AT&T regardless of the effect of tariff questions on IBM data customers. According to these sources AT&T is one of IBM's largest customers, second only to the U.S. Government. Bell System companies have more than 700 IBM CPUs installed for in-house use, according to one observer.

"An accomodation definitely exists between the two firms," one industry source told CW.

As an example IBM has avoided bringing out any products that would conflict with AT&T's data related products, he said.

An ex-IBMer disagrees. "I assure you there is no agreement between the two companies," he said. IBM is generally concerned with tariff issues when the user is going to be hurt."

Whether a computer supplier would have an impact in representing its users before a regulatory agency is questionable. One regulatory source told CW the most effective positions come from those directly affected.

And since the manufacturer is maintaining the users' equipment he would have a stake in efficient technical operation but not necessarily in the cost of common carrier services, he said.

Another aspect of the regulatory picture is IBM's role as a data user. It is well known that IBM maintains a 50 kbit/sec data network across the country for internal communications.

The firm has usually been mum about the exact uses of this system but presumably it does monitor phone costs carefully like any other user.

Asked for comment on IBM's policy, a spokesman said, "We are concerned with regulatory issues that affect our users. We keep up with these issues through FCC publications, trade associations, and public notices. IBM does file opinions and briefs in important matters."

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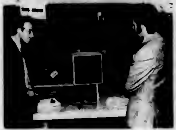
computer industry

a Computerworld news section about the nation's fastest growing industry

September 1, 1971



Dr. Harry Lee, a vice-president of Applicon Computer Systems, demonstrates a computer aided design system for integrated circuits to J.M. Morris of National Semiconductor.

Jim Davis is the man between the DEC Twins, Dana and Denise Hansen. He has his arm around DEC's new PDP-11/05 though; business, after all, is business.

Robert E. Conger, vice-president of Dicom Industries, explains the operation of a Dicom Model 345 cassette magnetic tape terminal, a unit with communications capability.

Allen E. Garfein of Engineered Data Peripherals shows his new disk tester to Daniel J. Sullivan of Tally Corp. and Jim Jordan, vice-president of Moxon Electronics. (CW Staff Photos)

CI Notes

HIS Becomes Autonomous Half of Honeywell, Inc.

MINNEAPOLIS – Honeywell, Inc. has rearranged its internal structure, giving the Information Systems unit parity with the rest of the company. The other half of Honeywell will be called Control Systems, and will do the big red H's thermostat, industrial automation, and defense business.

Information Systems will still be headed by Clancy Spangle, with Allan Rudell, William Smart, and Alva Way assisting him in the management office. The unit will be comprised of four operating components: the French, British, and Italian companies, and Honeywell Information Systems, North America. Chairman James Binger attributed the reorganization to "the successful completion of the merger" with the General Electric computer business.

Japan Loves Them Novas

NEW YORK – Speaking to the New York Society of Security Analysts, Data General president Edson D. DeCastro said DG's Japanese licensee has received more orders for minis than the total previously exported to Japan by any other minicomputer manufacturer. He also officially stated DG has become "Number Two" in the mini industry on the basis of current shipment rate.

British Shipments Fall 18%

LONDON – If you think things are bad here, try the British computer industy. First quarter shipments fell 18% below the previous quarter, to a level of around $150 million, according to the Department of Trade and Industry. Worse yet, overseas deliveries fell by a third to $47 million. London financial experts have speculated the drop prompted the government's recent bolstering of ICL.

Bunker-Ramo To Announce

NEW YORK – Look for Bunker-Ramo to introduce a computerized market information service to brokers here next week.

DPF Buys 70% of Marshall Data

NEW YORK – What's going to happen to the leasing companies and the independent peripheral makers? Well, Data Processing Financial and General has agreed in principle to acquire 70% of Marshall Data Systems, the disk drive making subsidiary of Marshall Industries. Marshall will hold the other 30%. In return, DPF will advance $2 million in working captial to the new operation, guarantee its bank indebtedness, and finance up to $30 million of production over the next two years.

Praise Attendees

Wescon Exhibitors Discover Buying Mood

By E. Drake Lundell Jr.
Computer Industry Editor

SAN FRANCISCO – Reports of the demise of the OEM side of the computer and components industry appear to be exaggerated as the early results of the Wescon show here last week come in.

While the number of exhibits was down from the 1,000 booth level reached in recent years, the 350 exhibitors in 600 booths reported business was brisker than expected, considering the depressed state of the West Coast electronics industry.

The exhibitors showed optimism as, in the words of one, the attendees turned out to be "damned good prospects."

The optimism came as a surprise to most of the exhibitors, many of whom felt the economic climate would make it a slow show from the selling point of view, especially in the computer area.

One of the minicomputer manufacturers said: "The turnout here is really surprising. We frankly didn't expect to see so many people, but we're seeing plenty – and, believe it or not they're planning to buy."

"The quality of the people that are here is fantastic," a keyboard manufacturer said. "They all seem to be buying influences and we expect to see substantial business out of the show."

Another manufacturer, this time of paper tape equipment, noted "we had read that this show was dead, but it seems to be better to us than any in the last year. The potential business that could come out of it will make it more than worthwhile from our point of view."

Most of the computer action at the show was out of the data processing section and with manufacturers of automatic testing and manufacturing equipment, who featured minicomputer based systems. The number of computers in operation in this area was at least double the number shown in the computer section.

And the tempo was upbeat here too, One maker of automatic test equipment said that there seemed to be more real buying interest at Wescon "than I've seen in a long time."

The service firms represented were also doing a brisk business, with one noting that "people seem to be gearing up. Either it's false optimism or the industry is about to get back in gear again."

Some other sources at the show indicated the optimism might be off-base. One said: "These guys came here expecting a real disaster and just because it is not as bad as their pessimistic forecasts they think things are going to be bigger and better than ever.

The technical program run in conjunction with the exhibit was geared largely to converting defense-related technology to civilian and commercial needs.

In all of the sessions, industry representatives were told to heed the needs of the user when trying to penetrate these new markets and not to sell technology alone.

Glavin Advises User Orientation

SAN FRANCISCO – Manufacturers in both the computer and electronics industry have to do more to understand the problems – and meet the needs – of their users if they are to be successful in the markets of the '70s.

That is the message of Wescon keynoter William F. Glavin, group vice-president of Xerox and president of XDS. He also called on the industry to turn from its defense orientation and begin designing systems to meet pressing social needs of the nation.

Glavin told his Wescon audience that it should spend its time trying to correct a "technical-marketing imbalance" that has led to development of sophisticated technological systems that have little market because they do not meet user needs and wants.

"We have all put the challenge of the technology before the real need of the customer," Glavin stated.

"Until now we have been doing a wonderful job in advancing the state of the art . . . . But I suggest that in terms of serving customer needs we have not been doing such a wonderful job. We have been carried away with the glories and glamours of technological feats, that in many cases we have relegated to obscurity the customer, the user."

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Wescon Attendees Offered Assistance In Diversifying Into Commercial Field

By a CW Staff Writer

SAN FRANCISCO – Defense related firms in the electronics and computer business are finding their very survival depends on diversifying into commercial markets, speakers at a Wescon session here indicated.

There are three primary ways to enter the commercial market, according to Dr. Charles J. Breitwieser, executive vice-president of Cubic Corp.

"One is through internal product development. Second is purchasing new products or product lines from outside. Third, but not least, you can acquire companies already in the commercial market.

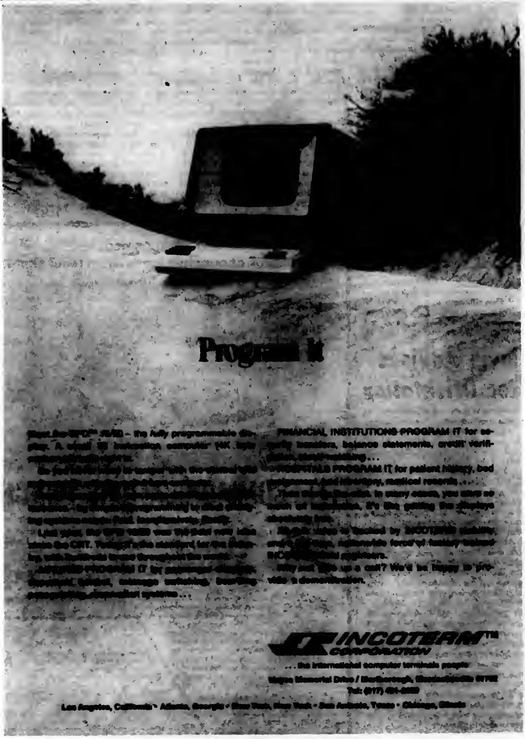
"Like everything else in business, if these various techniques are managed correctly, and your decisions are right 80% of the time. You'll have a good chance of being successful. If you're not so lucky, you'll wish you never heard of the commercial market."

The major thing that makes the transition from defense to commercial business difficult is "a lack of business understanding and commercial expertise" by management and workers in firms that have been accustomed to government contracting or subcontracting, Breitwieser said.

Technical people in top management positions often overlook the fact that a product must be introduced to the market before the competition, he said. In addition, aerospace firms are not used to building up inventories in anticipation of new business.

Personnel will also be a major requirement for the firm planning to enter the commercial market, according to Paul E. Putney, vice-president of Korn/Ferry International.

"The plain truth is that in order for a commercial venture to be a success, the company must find a professional manager experienced as an entrepreneurial manager in the commercial world, build an organization around him as a separate profit center, set up objectives to work toward and measure his performance against those objectives," he said.



DP-Controlled Manufacture Seen Blooming

SAN FRANCISCO – Computer aided design is being increasingly eclipsed by computer aided manufacturing (CAM) as "electronic companies scramble to turn their technology into a profit."

That was the conclusion of T.P. Rigoli of *EDN Magazine*, who noted CAM was a logical outgrowth of CAD and has been given great impetus by defacto standards created by TTL/DTL and the dual in-line package.

CW at Wescon

Speaking at a Wescon session here last week Rigoli warned, "Before getting into CAM, the prospective user must realize the success of his CAM venture depends on the integrity of a computer-generated data base.

"After all," he added, "the sophisticated N/C machines, with or without on-line controllers, are simply the expensive slaves of the software."

"Computer aided manufacturing offers a solution to the new manufacturing problems of the 1970s, a time in which we will see fewer of the long, unchanged production runs and more diversity in product line," Clark E. Coffee, a consultant, told the session.

"The more directly the control computer can communicate with the N/C tools on the shop floor, the better," Coffee said. "The direct interconnection of machine controllers with the central computer offers the feedback necessary to completely automate production, inventory, and cost control."

In the CAM systems of the future there is a need for more ease of interface to on-line controllers, Coffee said. There is also a need for more flexibility and compatibility within an entire system.

Suppliers of CAM systems must be based on the supplier commitment to continued development of the system to meet future needs.

In the standards area, Coffee said that the "numerical control tool manufacturers should cooperate eagerly, since it is fairly obvious their next major round of sales will come through replacing the equipment we now have with new, computer controlled equipment which offers the increased production through-put necessary to make them cost effective."

Medical Data Processing Requirements Provide Challenges and Opportunities

By E. Drake Lundell Jr.
CW Computer Industry Editor

SAN FRANCISCO – The medical and hospital market received heavy attention with two sessions as electronic and computer firms sought to find non-defense related markets.

The medical market is huge and growing rapidly, Morton D. Schwartz of the California State College at Long Beach, indicated, predicting the market would grow from $64 billion – or 7% of the gross national product – in 1969 to $123 billion by 1975.

"By far the largest portion of the health care dollar – roughly 38% – goes for hospital services," he said. This portion accounted for a volume of $24 billion in 1969.

"Current needs for automated multitest laboratories," according to Dr. Morris F. Collen, director of medical methods research at the Kaiser Foundation Research Institute, "include improved system designs which are adaptive to the varying requirements of different patient groups and different service needs; improved equipment for almost every laboratory phase to provide better quality control; reliability; and interfacing between the equipment, the computer and the people."

Before any multiphasic screening program can function completely on-line, Collen said, "computerized trend analyses of electrocardiograms, chest x-rays and other wave forms, patterns, and images must be operational."

In addition, he stated that there is presently a need to develop "better mass, random access, low cost storage files to handle the immense amount of medical data generated through the years for any large number of patients.

"The file organization of such a data bank requires an integrated continuous, variable length, variable format record containing all multiphasic examinations. This is essential to provide trend analysis through time."

In a session on the "Future of Medical Information Systems," Temple W. Neumann, manager of medical systems department

CW at Wescon

in the Western Development Laboratories division of Philco-Ford Corp. said there is a mismatch between demands and projected resources in the medical information systems field.

While progress has been made in the field of hospital information systems, we "have fallen far short of the potential envisioned a decade ago for the computer-assisted, highly-automated health facility," Dr. B.G. Lamson, director of hospitals and clinics at UCLA, told the session.

"We are still under major pressure to improve the management of our facilities and devise more effective schemes of medical record accumulation and utilization," he added.

Using the total systems approach to the problems of medical information systems has proved in the past to be too complex, too expensive and too difficult, he said, whereas the modular approach allows the institution to start smaller and with less capital expenditure, he added.

To date "computer technology has failed to have a significant impact on medical care because of unrealistic desires to implement total systems," in the words of Dr. Jerome H. Grossman, associate director of medical clinics and assistant director of the laboratory of computer science at the Massachusetts General Hospital.

A more realistic approach to the development of medical information systems would include "developing good rapport between engineering and medical staffs; developing small projects which can be linked together as they prove successful; and using a computer system which is highly reliable and imitates this step-wise approach," he said.

"The start-up costs, whether for one large system, or for a number of small ones, are very expensive," he noted, adding that "there has been little ability to demonstrate any actual savings resulting from the implementation of a computer system."

At the same time, however, Grossman indicated "the medical care institutions are being faced with implementing computer systems as the only possible solution to the problems of handling increasing amounts of complex data."

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Two Software Suppliers Report Increased Earnings

NEW YORK – Two software companies are showing signs of coming out of the economic slump. For the first half, Programming Methods has reported earnings up 34%, and for the nine months Computing and Software of Los Angeles has reported earnings up almost 10%.

Both earnings and revenues set a record at PMI, which is 74%-owned by General Telephone and Electronics. Net revenues for the half were $5.6 million, up from $2.8 million for the 1970 half. Net earnings increased to $351,000 or 39 cents a share, from $262,000 or 30 cents a share.

For the quarter, revenues were $3.2 million, up from $1.5 million, and earnings were $182,000, up from $140,000. Per share earnings for the second quarter rose from 16 cents to 20 cents.

While the picture wasn't quite as jubilant at Computing and Software, the increase in sales and earnings continued an upward trend. For the nine months, earnings rose from $4.8 million to $5.1 million, giving per share earnings a boost from 88 cents to 91 cents.

Sales volume rose from $64.3 million to $68.3 million. The year-earlier figures are restated to include acquisitions on a pooling of interests basis.

C&S President Norman E. Friedmann said that in the latest quarter his company has grown internally, in contrast to going the acquisition route. He mentioned geographic expansion and penetration into new industries as two sources for new customers.

Systems Reports $12 Million Loss

FORT LAUDERDALE, Fla. – A special charge of $3.5 million piled on top of an operating loss of $8.5 million has given mini-making Systems Engineering Laboratories a whopping $12 million loss for the fiscal year ended June 25.

An SEL spokesman predicted, though, that the company would operate profitably during the current quarter and fiscal 1972.

Revenues for the year fell from $21.2 million to $12.8 million.

SEL President C.E. Griffin attributed the loss to cutbacks in capital equipment buying and cancellation and slowdown of government contracts, as well as inventory write-downs.

Nickels & Dimes

Image Enterprises of Los Angeles, a microfilm company specializing in ultramicrofiche, has placed $2.3 million of its common stock privately. The money will be used for product development and expansion.

$$$

Levin-Townsend Computer Corp. has changed the rules on its sinking fund debentures. In return for an interest rate boost from 7-1/2% to 8-1/2%, L-T will be able to increase the ratio of senior debt to subordinated debt, to acquire its subordinated debt in certain, specified ways, and to meet its current annual redemption requirements of $2 million principal on a cumulative monthly basis of $167,000.

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DCL, Inc., the new corporate entity that owns all of Diebold Computer Leasing, has been listed on the American Stock Exchange. Under a reorganization plan, each share of the leasing company's common Class A was changed into one share of DCL common.

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Computerworld Stock Trading Summary

All statistics compiled, computed and formatted by TRADE★QUOTES, INC. Cambridge, Mass. 02139

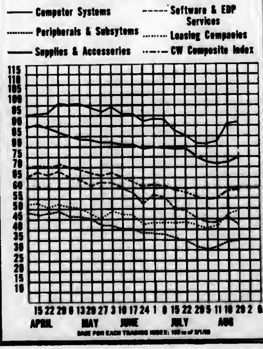
CLOSIRG PRICES THURSOAT, AUGUST 26, 1S71

E S C R		PRICE 1S71 RANGE (1)	CLOSE AUG 26 1S71	WEEK NET CRNGE	WEEK PCT CHRGE
	SOFTWARE 8 EOP SERVICES				
O	ADVANCED COMP TECH	1- 4	1 3/8	0	0.0
A	APPLIEO OATA RES.	5- 13	6 7/8	- 1/4	-3.5
O	APPLIED LOGIC	1- 3	3/8	- 1/8	-16.6
O	ARIES	1- 2	7/8	0	0.0
	AUTOMATIC OATA PROC	44- 85	57 3/4	-3 1/8	-5.1
O	AUTO SCIERCES	3- 8	3 7/8	+ 1/2	+14.8
O	BOOTHE OATA STS	1- 2	7/8	- 1/8	-12.3
O	BRANDON APPLIEO STS	1- 1	3/8	0	0.0
O	COMPUTER ERVIRON	1- 2	3/4	0	0.0
O	COMPUTER RETWORX	2- 11	4 3/4	+ 3/8	+13.1
O	COMPUTER PROPERTT	5- 11	5 1/4	0	0.0
R	COMPUTER SCIERCES	6- 17	8 1/4	-1 3/8	-12.5
O	COMPUTER TASX GROUP	1- 3	1 1/2	- 1/4	-14.2
O	COMPUTER USAGE	3- 16	7 5/6	- 1/8	-1.6
O	COMP AUTOMO REPORTS	8- 13	10	- 1/2	-4.7
R	COMPUTIRO & SOFTWARE	28- 43	26 3/8	-2 1/4	-7.7
O	COMRESS	2- 4	2 1/4	- 1/8	-3.2
O	COMSRARE	4- 8	4	0	0.0
	1 8 8.0				
O	OATA AUTOMATION	1- 4	1 1/8	0	0.0
O	OATA PACXAOING	6- 10	8 1/2	- 1/8	-1.4
O	OATAMATION SERVICE	1- 3	3/4	0	0.0
L	OATATAS	4- 10	7	+ 1/4	+3.7
O	OIOITEK	1- 4	1 3/8	+ 1/8	+10.0
O	EOP RESOURCES	7- 16	8 3/4	0	0.0
A	ELECT COMP PROG	3- 7	3 1/2	0	0.0
R	ELECTRONIC OATA STS.	33- 83	00 1/2	- 3/4	-1.2
O	IRFORMATICS	7- 13	S 1/2	-1	-8.3
A	ITEL	11- 23	12 3/4	-1	-7.2
O	XEARE ASSOCIATES	5- 14	5 1/2	-1	-15.3
8					
O	KEYOATA CORP	8- 14	7 1/2	- 1/2	-6.2
A	MANAGEMENT OATA	8- 11	7 1/2	- 1/2	-6.2
O	RATIONAL CSS IRC	7- 14	8 1/2	+ 1/2	+6.2
O	RAT COMP ANALTSTS	1- 4	1 1/4	+ 1/4	+25.0
O	NAT.COMP. SERV.	1- 4	3/4	- 1/8	-14.2
R	PLARRING R SEARCH	18- 28	18 3/4	+ 1/4	+1.3
O	PROGRAMMIRO METHOOS	18- 28	21	- 1/2	-2.3
O	PROGRAMMING 8 STS	2- 4	2	- 3/8	-15.7
L	PROORAMMING SCIERCES	1- 3	1/8	0	0.0
O	SCIENTIFIC COMPUTERS	2- 3	2 3/4	+ 1/4	+10.0
O	SCIENTIFIC RESOURCES	1- 2	3/6	0	0.0
O	SOFTWARE STSTEMS	1- 3	2 1/2	0	0.0
O	TSS COMPUTER CERTERS	4- 8	4 3/4	+ 3/4	+18.7
O	TOLLET INTL CORP	3- 8	7 1/2	- 1/2	-6.2
O	URITEO OATA CERTER	2- 7	3 3/8	- 1/6	-3.5
N	UNIVERSITT COMPUTIRO	21- 38	26 3/4	- 1/2	-1.6
A	URS STSTEMS	8- 11	8 7/8	0	0.0
O	U.S. TIME SRARINO	1- 3	7/8	0	0.0
O	VORTEX CORP	2- 3	4	+ 3/4	+23.S
	PERIPRERALS S SUBSTSTEMS				
R	AOORESSOGRAPH-MULT	24- 48	38 1/4	-2	-5.2
O	ALPRANUMERIC	2- 8	2 3/8	- 1/4	-8.5
	AMPEX CORP	14- 25	16	+ 1/4	+1.5
O	ASTROOATA	1- 2	1 1/2	+ 1/4	+20.0
O	ATLANTIC TECHNOLOOY	3- 8	4 1/2	- 1/8	-2.7
A	BOLT.BERAREK 8 N N	5- 8	4 7/8	0	0.0
R	BUNXER-RAMO	10- 17	11 3/8	+1 1/8	+10.8
A	CALCOMP	18- 33	21	+ 1/2	+2.4
O	COGRITRORICS	3- 6	3 3/4	+ 1/2	+15.3
O	COLORADO INSTRUMENTS	2- 8	2 7/8	+ 1/2	+21.8
O	COMPUTER COMMUN.	6- 15	7 7/8	- 3/8	-4.5
A	COMPUTER EQUIPMENT	4- 7	3 7/8	- 1/8	-3.1
A	COMPUTEST	8- 20	8 3/8	+ 1/4	+2.7
O	CORSOL COMPUTER LTD.	3- 12	4 3/4	- 1/2	-8.5
A	OATA PROOUCTS CORP	5- 10	3 3/8	- 3/8	-6.3
O	OATA TECHNOLOGY	3- 8	4 7/8	- 3/8	-7.1
O	OIGITRONICS	4- 8	4 3/8	+ 1/4	+5.7
N	ELECTRONIC M 8 M	8- 16	11 1/8	- 1/4	-2.1
O	FASNI-TEK	2- 4	2 3/6	- 1/8	-4.3
O	FARRINSTON MFG	1- 3	1/4	0	0.0
O	FOTO-MEM INC	1- 8	1 1/6	- 1/8	-10.0
O	INFOREX INC	25- 48	32	+2 1/2	+8.4
O	INFORMATION OISPLATS	5- 8	3 1/4	S	0.0
O	MANAGEMENT ASSIST	1- 2	7/8	+ 1/4	+40.0
A	MARSHALL INDUSTRIES	14- 27	15 7/8	- 7/8	-5.2
A	MILGO ELECTRONICS	13- 28	15 1/4	-1	-6.1
N	MOHAWK OATA SCI	22- 47	28 1/4	+1 1/2	+5.6
O	ON LINE STSTEMS INC	7- 18	11	+1	+10.S
O	OPTICAL SCANNING	10- 18	12	+ 1/6	+1.S
O	PHOTON	7- 12	8	6	6.S
O	PHOTO-MAGNETIC SYS.	1- S	2	6	0.0
A	POTTEN INSTRUMENT	13- 23	15 1/8	- 3/8	-2.4
O	PRECISION INST.	7- 15	9 1/2	S	0.0
O	NECOGNITION EQUIP	12- 26	17 5/8	+1 7/8	+11.8
O	NEOCOR CORP.	4- 8	5	+ 3/4	+17.8
N	SANDERS ASSOCIATES	11- 22	12 3/8	- 1/4	-1.8
O	SCAN DATA	S- 13	13 1/2	+ 7/8	+6.6
O	TALLV CONP.	6- 18	11 3/6	+ 7/8	+8.3
	TELES	13- 22	14 2/8	- 3/8	-2.6
O	VIATRON	1- 4	1/4	- 5/8	-71.4
	SUPPLIES S ACCESSORIES				
N	ADAMS-MILLIS CORP	12- 16	12 1/2	-1 3/8	-S.S
O	SALTIMORE SUS FORMS	8- 16	7 3/8	+ 1/8	+1.6
A	SANRY WRIGHT	8- 13	6	+ 3/8	+4.6
A	SATA DOCUMENTS	15- 28	18	- 3/4	-4.6
O	DUPLES PRODUCTS INC	6- 10	S 3/4	+ 1/2	+5.4
N	ENNIS BUS. FORMS	S- 23	7 1/4	- 1/6	-1.S
O	GRAHAM MAGNETICS	9- 35	23 3/4	+ 1/2	+2.1
O	GRAPHIC CONTROLS	6- 15	11 1/8	+ 3/8	+3.4
N	MEMORES	27- 76	35 1/4	+3 1/4	+6.8
N	3M COMPANY	66-123	121 5/8	+ 7/8	+S.7

E S C R		PRICE 1S71 RAROE (1)	CLOSE AUO 26 1S71	WEEK K T CRNOE	WEEK PCT CHROE
O	MOORE SUS. FORMS	36- 42	38	+1 3/4	+4.S
N	RASHUA CORP	29- 47	43 2/4	+2 1/4	+5.2
O	RETNOLOS 8 RETROLO	37- 82	S7 1/2	-3 1/2	-5.7
O	STAROARO R SISTER	18- 23	28 1/8	+1 1/8	+3.8
O	TAS PROOUCTS CO	8- 17	13 7/8	- 3/8	-2.8
R	UARCO	25- 34	23 1/4	- 7/8	-3.3
A	WASASR MAGNETICS	6- 10	6 7/8	6	0.0
R	WALLACE SUS FORMS	18- 28	1S 7/8	+1 3/8	+8.S
	COMPUTER SYSTEMS				
N	SURROUORS CORP	103-138	135 1/4	+4	+3.0
R	COLLINS RAOIO	12- 20	13 3/4	+1	+7.8
N	CORTROL OATA CORP	48- 83	5S 1/2	-1	-1.6
O	OATA OERERAL CORP	1S- 55	54 1/2	+6 1/4	+12.8
R	OIOITAL EQUIPMERT	53- 83	77	+ 1/2	+0.6
N	ELECTRONIC ASSOC.	5- S	8 1/2	- 1/8	-1.8
A	ELECTRONIC ENGINEER.	5- S	8	0	0.0
R	FOXSORO	25- 46	48	+ 3/8	+0.8
O	'OENERAL AUTOMATION	S- 28	13	- 1/4	-1.8
R	GERERAL ELECTRIC	33-124	62	+1 1/8	+1.8
	HEWLETT-PACKARO CO	30- 43	41 1/4	0	0.0
	HONEYNELL INC	83-123	107 1/8	+4 1/2	+4.3
	ISM	284-364	324	+7	+2.2
O	IRTEROATA IRC	6- 11	7 3/4	0	0.0
N	RCR	37- 48	43 1/8	+1 5/8	+3.6
N	RCA	28- 41	33 3/4	+ 1/2	+1.4
N	RAYTHEOR CO	27- 46	38 3/4	-1 3/8	-3.6
O	SCI. CONTROL CORP.	1- 2	3/4	0	0.0
N	SPERRT RAND	25- 38	31 7/8	+ 3/8	+1.1
A	SYSTEMS ERG. LASS	8- 18	8 1/2	+ 1/8	+1.3
R	VARIAN ASSOCIATES	13- 18	13 1/8	+ 1/2	+3.4
R	VICTOR COMPTOMETER	14- 27	17 1/4	+ 3/4	+4.3
R	NANG LASS.	28- 50	48 3/4	+2 3/4	+5.5
R	XEROX CORP	83-118	118 1/2	+2	+1.7
	LEASIRO COMPARIES				
A	SOOTHE COMPUTER	13- 27	19 1/6	+ 3/8	+2.0
O	SRESRARAR COMP.	2- 4	2 3/4	- 1/4	-8.3
O	COMPUTER EXCRANGE	3- 8	3 3/4	- 3/8	-8.0
A	COMPUTER IRVSTRS ORP	8- 14	11 3/8	+1 5/8	+18.5
N	OATA PROC. F 8 G	11- 15	14 3/8	0	0.0
O	OATRONIC RENTAL	2- 4	2 1/8	0	0.0
A	OCL IRC	5- 13	8 5/8	- 5/8	-6.7
A	OEARSORN-STORM	24- 44	40 1/4	+ 1/2	+1.2
A	OPA, INC.	4- 8	7 3/8	+ 1/4	+3.5
A	SRANITE MGT	7- 13	7 3/8	+ 3/4	+10.6
A	ORETHOUNO COMPUTER	7- 11	8 1/8	- 1/8	-1.3
N	LEASCO CORP	18- 25	24 1/8	+ 1/8	+0.5
O	LECTRO MGT INC	2- 3	4	+1 7/8	+88.2
O	LMC OATA, IRC.	1- 1	1 1/8	+ 3/8	+50.0
O	RCC IRDUSTRIES	3- 6	7	- 1/8	-1.7
A	ROCXWOOD COMPUTER (FORMERLT LEVIR-TOWNSERO COMPUTER)	5- S	4 1/2	-1	-18.1
O	STSTEMS CAPITAL	3- 7	S 3/8	- 3/8	-3.3
R	U.S. LEASING	18- 34	34	+ 7/8	+2.8

ESCR: N=REW TORK EXCRANGE; A=AMERICAN EXCRANGE
L=NATIORAL EXCHANOE; O=OVER-THE-COURTER
O-T-C PRICES ARE 8IO PRICES AS OF 3 P.M. OR LAST 8IO
(1) TO REAREST OOLLAR

Computer Stocks Trading Index



Earnings Reports

APPLIED DATA RESEARCH
Six Months Ended Juna 30

	a1S71	1970
Revenua	$3,336,401	$3,278,394
Taxes	b352,320	343,171
Spec Cred	c83,716	.....
Loss	310,062	354,330

a—Preliminary. As of Jan. 1, 1S71 company extended estimated useful lives for calculated amortization of it proprietary softwara packages from three to fiva years. b—Cradit. c—Gain on partial redemption of convertibla debentures nat of faderal income taxes.

BUNKER-RAMO
Three Months Ended June 30

	1S71	1S70
Shr Ernd	$.04	a$.15
Revanue	60,597,058	62,092,305
Earnings	1,468,159	3,832,971
6 Mo Shr	.02	a.28
Revanue	113,097,771	123,824,867
Earnings	1,791,269	8,506,248

a—Based on common and common equivalent shares.

CONTROL OATA
Three Months Ended Juna 30

	a1971	b1S70
cShr Ernd	$.85	$.08
Revenue	141,101,000	143,807,000
Spec Chg	186,000	S9,000
aEarnings	12,550,000	1,436,000
c6 Mo Shr	1.64	.08
Revanua	282,108,000	269,346,000
Spec Item	525,000	(69,000)
aEarnings	25,194,000	1,893,000

a—As of Jan. 1, 1971 company extended dapreciabla lifa of certain computer aquipment from four to fiva and six years, increasing net income for six months by about $4.6 million or 32 cents a share. b—Restated to include equity in net loss of approximataly 50%-owned affiliates. c—Based on incoma before special itams. e—Equal to 84 cents a shara in tha quartar and $1.68 a shara in tha six months of 1971 compared with 7 cents and 8 cents, respectively, in 1970.

DIEBOLD COMPUTER LEASING
Three Months Ended Juna 30

	1S71	1S70
Shr Ernd	$.25	$.11
Revenue	9,150,000	8,172,000
Earnings	7S3,000	446,000
6 Mo Shr	.42	.21
Revenua	17,985,000	18,331,000
Earnings	1,501,000	827,000

INFORMATICS
Three Months Ended Juna 26

	1S71	1970
Shr Ernd	$.03	$.04
Revenue	5,105,000	4,730,000
Earnings	48,000	56,000

COGNITRONICS
Three Months Ended June 30

Revenua	$835,616	$995,618
Loss	122,576	62,429
6 Mo Rev	1,624,301	1,857,106
Loss	298,184	144,518

STERLING COMPUTER
Three Months Ended Juna 30

	1S71	1S70
Shr Ernd	$.04	$.02
Ravenua	651,645	862,34S
Earnings	77,651	48,222

BRESNAHAN COMPUTER
Three Months Ended Juna 30

	1971	1970
Shr Ernd	$.06	$.02
Ravenua	1,283,000	$1,499,000
Earnings	106,000	50,000
9 Mo Shr	.12	.19
Revenua	4,288,000	4,480,000
Earnings	229,000	378,000

TALLY
Six Months Ended June 30

	1971	1970
Shr Ernd	.....	$.11
Revenue	a5,058,000	7,487,000
Earnings (Loss)	(451,000)	187,000

a—Equipment leased in this period is generally accounted for under tha operating method. If it were financed on a nonrecourse third party basis as was the case in the prior period, operating revenues would have been $5,741,000.

DATATAB
Six Months Ended June 30

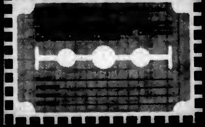
	1971	a1970
Shr Ernd	$.15	$.10
Revenua	2,024,574	1,925,325
Earnings	84,739	56,999

a—Restated.

OFFICE SPACE FOR RENT

817 Bway, N.Y.C.

5,000 sq. ft. OFFICE SPACE INCLUDING 1,100 sq. ft. COMPUTER ROOM COMPLETE WITH FLOATING FLOOR ANO SPECIAL 15 TON COMPUTER ROOM AIR CONDITIONER.

TWENTY THREE OFFICES, NEW INSTALLATION, HUNG CEILING, NEW BATHROOMS, NEW SHOWER ROOM, RECESSED FLUORESCENT LIGHTING, AIR CONDITIONED. $3.25 per ft. PHONE SH.3-5600

THIS TIME FRAN TARKENTON ISN'T PUSHING
RAZOR BLADES, HAIR TONIC OR SHAVING CREAM.
HE'S SELLING SOFTWARE.